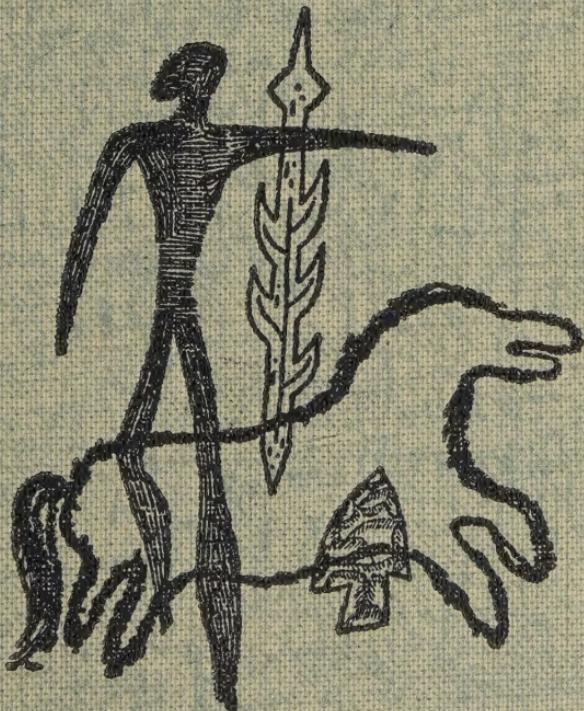


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PREHISTORIC MAN

Books by John Bailey

PREHISTORIC MAN

THE WONDERFUL DOLPHINS

PREHISTORIC MAN

written and illustrated by
JOHN BAILEY



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PREHISTORIC MAN

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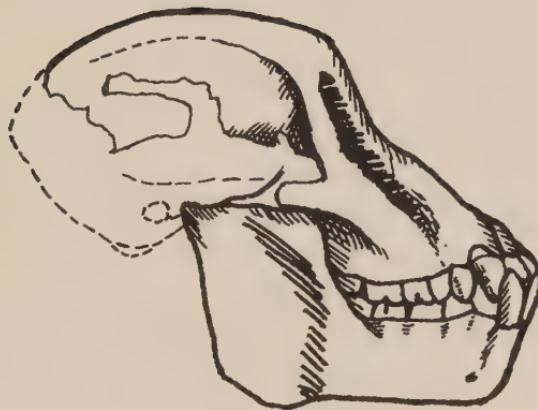
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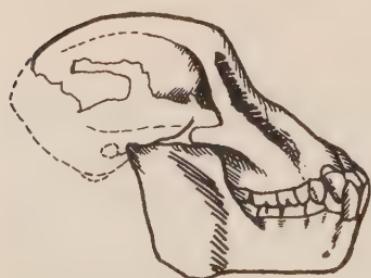
Introduction

Our general idea of prehistoric man has been formed by deduction, and the reason for this book is to point out that the few facts we have—and they are very few—are capable of being interpreted in various ways. This is a book of speculation, based on those facts, and deliberately showing other possible conclusions than those generally reached. Everything in this book, and in all other books on the subject, is open to question. The sequence of some events is known, but all the dates are

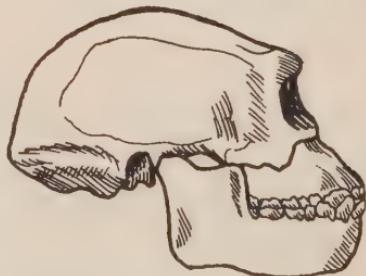
rough guesses and are unquestionably inexact to varying degrees. The descriptions of extinct creatures are my own fancy and are as good as the next, since we cannot know the shapes of the soft parts—eyes, ears, the tip of the nose, lips—or the color of eyes or skin, or whether a creature was bare or had a thick pelt, or whether it was brightly colored or gray. You are free to doubt everything.

Since in most cases we have only fossil teeth to help us to deduce what early primates—manlike animals—were like, some description of teeth will give you an idea of the difficult job scientists have in searching for clues in their size, shape, consistency, and pattern.

Most fossil finds of prehistoric apes consist of nothing but teeth. They are the part of the body most likely to be preserved, along with a piece of jawbone or a bit of skull, so that most deductions of primate evolution are made on the basis of teeth.



The skull of the ape
Proconsul.



The skull of the ape-man
Pithecanthropus Erectus.

Teeth are special modifications of bony structures found in the external skin of some of the lower vertebrates. A gradual change can be traced from these simple teeth to the most complex teeth. True teeth are found only in vertebrate mammals.

The first fish had no teeth. Early sharks had scaly teeth growing from the skin covering the jaws. In later bony fish the teeth were no longer scales but were pointed and grew out of tough, bony skin. There were no sockets for the teeth, and they grew not only on the jaws but all over the roof of the mouth.

In the early reptiles there were sockets for teeth, which were simple pegs with conical points. In the early mammal-like reptiles the teeth were not simple pegs but were divided into front incisors, for biting; canines, or eye-teeth; and molars, for grinding and crushing.

In primitive mammals the teeth underwent further change. Each molar tooth was made up of three conical



The skull of Neanderthal.



The skull of modern man.

points, called "cusps." The middle point, or cusp, was quite large, and the other two were small. Each tooth had two roots. Later the two small side cusps grew as large as the central cusp, and twisted around to form a triangle.

The molar tooth eventually became wider. There were still three cusps, though some of them flattened in one direction or another. On the back of the tooth a crushing heel was added. In early mammals there were many different arrangements of the three cusps and the crushing heel. Scientists have studied these various tooth patterns, and have concluded that the chewing surfaces of teeth are an important aid in determining relationships among animals.

In early manlike forms a fourth cusp was added to the chewing surface of the molar, which became a series of hills and valleys, some V-shaped, others rounded.

By comparing all these differences in teeth, scientists are able to deduce a great deal about the whole form of the animal.

There are other clues, and scientists make use of them all. One of the most expert at this sort of deduction was the English zoologist Professor Richard Owen. When someone sent him a small splinter of bone from New Zealand, he studied it and announced that it was a part of the thighbone of a large flightless bird about ten feet high. No skeleton of such a bird had been found, but not long afterward skeletons of the moa began to turn up, proving Professor Owen correct.

Great analytical powers are required in order to make correct deductions from fossils. Even the modern

skulls of lions and tigers are nearly impossible to tell apart. But in spite of the difficulty, much valuable information has been gathered. A single neck bone will indicate whether a prehistoric man had a long or a short neck. Prehistoric men who walked barefoot on snow and ice tended to have short, broad feet and short toes. There is a possibility that they had thick pads of hair on the soles of the feet, as well.

It is partly by such reasoning that an attempt is made to arrive at some idea of the external appearance of prehistoric men. But not every scientist, skilled as he may be in other ways, is as good at deduction as was Professor Owen. The mass of speculation from the few facts we possess has led to a generally accepted picture of the evolution of man that may be quite false—a common ancestor of ape and man, a slowly bulging forehead as pre-man grows brighter, the beginning of the use of tools, and finally the appearance of civilization. None of this sequence may be true, and much of it depends on deductions from teeth. Fossil teeth are very useful clues, but as Dr. Earnest Hooton, author of *Up from the Ape*, says, ". . . Since out and out apes have teeth hardly distinguishable from men . . . we must be very cautious in tracing human descent exclusively from details of form and pattern of teeth."



1

The mists of time

About 30 million years ago, the giant primates developed from small primitive anthropoids. The earliest primates of 70 million years ago were the size of rats and mice. It is probable that some of them walked on their hind legs.

At about that time a large, four-footed carnivorous animal—the whale—left the land and took to the sea.

Nearly all dinosaurs died out, although a few survived in areas of vast steaming swamplands.

Mammals appeared for the first time.

The palms and ferns of the ancient world were dying out, and for the first time trees with bark appeared—oak, beech, poplar, cypress, and tulip trees. Plant life similar to but not the same as that we know today began.

North America had been connected by a land bridge to Asia and Europe, and animals had moved freely from one land mass to the other. The land bridge sank beneath the sea. A few islands, including the Azores, remained of the land that had connected North America to Africa.

All during these millions of years innumerable ape-shaped animals existed. The earliest ape of which we have any fossil lived about 40 million years ago and is named *Parapithecus*. It was a very small animal and already had the specialized teeth of modern apes—incisors, canines, pre-molars, and molars. Some scientists think it possible that the modern apes are descended from *Parapithecus*, and others think that *Parapithecus* is a member of an apelike stock from which man himself is descended.

Twenty-six million years ago, 14 million years after *Parapithecus*, a big ape named *Proconsul* lived in the forests. Most scientists say that he is close to the ancestral line from which man came, others say that he is in the direct line of man, while still others think that he was the ancestor of the chimpanzee, but not of man. Fossil apes have been found side by side with *Proconsul*, so he could not have been their ancestor.

Proconsul was lightly built. His fore and hind legs were of nearly equal length so he could have run either

on all fours or as a chimpanzee does, on his bent hind legs, touching the knuckles of his hands to the ground for balance. According to Professor Hooton, his ankle bones, when compared to the ankle bones of a chimpanzee, show some slight form in the direction of the human. He certainly could walk semierect.

But whether Proconsul ran erect on his two hind legs or ran on all fours, he had need of all his speed as well as his intelligence to escape from dreadful enemies, one of which was a ratlike rodent the size of an ox.

There is a difference of opinion among leading scientists as to whether or not man's ancestors lived in trees. The ancient primate forms, most often pointed to as our possible ancestors, had short arms which were not particularly adapted for swinging from branch to branch. Nor does swinging through the trees encourage the development of an opposable thumb such as ours. In fact, the spider monkey's thumb has disappeared entirely, and scientists say that this has resulted from swinging on branches.

On the other hand, there is nothing about walking erect on two hind legs that prevents one from climbing a tree. There were lots of hairy "people" walking around on two legs millions of years ago, and all of them must have been pretty fast at climbing trees, whether their big toes stuck out at right angles to the rest of their toes or not.

An important list of authorities maintains that man's ancestry goes back some 27 million years to a small ground ape which did not live in trees but walked erect on his two hind legs. A majority of them believe that

apes and men arrived at these similarities of detail separately.

One authority, Dr. Morton, says that the length of the taurus, a bone in the human foot, shows that man's ancestor was walking on the ground when he was very small, and that if he had lived in the trees and had come down from them when he had grown large, the bearing of his weight on the foot would have crushed the taurus.

The idea that man's ancestor at one time lived in trees has had a lot of publicity, but there is nothing about walking on the ground that requires a life in the trees first.



2

Before man

A group of Dryopithecines trotted along the bank of a river on a nameless continent 19 million years ago. They were about the size of chimpanzees, though their facial features were more manlike in many details, as were their bodies.

Suddenly their leader froze, standing erect with a root of wild celery halfway to his mouth. Ahead of the group a bear-dog was flattened on his belly in the sand, motionless except for a twitching tail and snarling lips.

Bears and dogs are related, but in those days they had not yet become separated into two different families of animals. The bear-dog on the riverbank was about the size of a grizzly bear and had a long, thick, furry tail, like a cat, and the head of a wolf.

When the Dryopithecines saw this terrifying monster, they were beside themselves with rage and horror. They stooped to pick up stones and began throwing them at the bear-dog. They threw wildly, blinking rapidly and blowing air defiantly through their wide nostrils.

The bear-dog roared and lashed his tail, but many of the stones were finding their marks and he wheeled suddenly and trotted off up the riverbank.

Some scientists believe that man is descended from *Dryopithecus*. This belief is based mainly on certain clues in the patterns of teeth.

From teeth alone we are already certain that there were at least seven genera of *Dryopithecus*, each representing many groups and species, some of them small, and some of them bigger, perhaps, than gorillas. Professor W. K. Gregory, one of the leading authorities on the subject of tooth evolution, has suggested that some anthropoid in the *Dryopithecus* group gave rise to modern man. However, more recent discoveries have made it seem less and less likely that *Dryopithecus* is our ancestor, and a majority of authorities now agree that *Dryopithecus* was probably the ancestor of chimpanzees and gorillas, but not of man.

Early in 1967 the famous anthropologist Dr. Louis Leakey announced that some bone fragments and teeth formerly assigned to the Dryopithecine group are actu-

ally fossils of a more manlike creature which roamed the forest at the same time as *Dryopithecus*. His tooth pattern is different from the tooth pattern of *Dryopithecus*. To add to the confusion, a prehistoric ape has been found with a tooth pattern derived from *Dryopithecus* and, since this ape lived at the same time as prehistoric man, man could not be a descendant of the ape or of *Dryopithecus*. Also the *Dryopithecus* tooth pattern appears in prehistoric man but not in modern man.



3

The man-apes

The tribe had been traveling for ten years, going wherever the game was plentiful or the land more desirable. These were the man-apes (*Australopithecus*, which, by the way, has nothing whatever to do with Australia), for whom scientists have long names which no one can remember. They were ape-headed, with big lower jaws, and ape-sized but not ape-shaped. Where their bodies differed from apes, they had human characteristics. Their faces were a combination of simian

and human features. Their foreheads were rounded and had heavy eyebrow ridges. They were great shaggy creatures covered with thick, brown hair like fur, with bull necks and great muscles in their massive shoulders. They carried stones and clubs in their hairy hands. Their origins are lost in the mists of time.

For a period of millions of years before the man-apes we have no primate fossils. But there is little doubt that the man-apes were descended from a series of extinct humanoid creatures, that the change had taken place simultaneously in localities far removed from each other, and that there were many species of man-apes not related to each other.

The least human of the man-apes was the "southern ape" of South Africa (*Australopithecus*). Some scientists think that he was a link between *Proconsul* and early man. He had a larger brain than the chimpanzee and a more complicated brain than the gorilla. He was an intelligent animal, and was unlike anything we have on earth today. Certain areas of his brain were profoundly different from those of apes now living. The frontal part of the brain shows bulges and depressions and complicated wrinkles which, according to scientists, indicate "great manual dexterity," and "enhanced intellectual control of muscles concerned in maintaining balance during the performance of designed movements." Such manual dexterity, balance, and control of muscles are needed in throwing stones accurately at a target, for instance.

The man-apes spread throughout the tropical Old World. Summer was eternal. The forest reached to the

Poles. England was still connected to the European continent. The Himalayas were a low chain of hills. The Sahara Desert was green.

The wandering tribe of man-apes came to a halt. At their feet lay a great abyss. The stupendous cliff on which they stood dropped off sheerly for nearly a mile. Far below them a river could be seen winding like a silver thread through the middle of a green valley. The river was embanked by two chains of hills extending toward the south until they were lost in the blue haze of distance.

The man-apes twitched their lips in indecision, nodded, shook themselves, tossed their heads and arms around in violent gestures, and drummed on the ground. Their leader turned to the right, and they followed along the edge of the precipice to a ridge on the face of the cliff. Presently the ridge became narrower and a vast crevice yawned across the path. They went down, dropping from ledge to ledge with the lithe, agile movements of apes, and they worked around the edges of precipices, walking sure-footed on rock debris. Finally they reached a jungle-choked ravine filled with branches, stones, and thorns.

They came out into open, rolling country with smooth, rounded hills and grassy meadows and valleys dotted with ponds. In the distance, as far as the eye could see, thousands of beasts grazed. On the farther side of the river three mastodons trotted past—four-tusked because the two lower incisors had also grown into tusks. A hundred yards away the silhouette of a cave lion appeared

at the top of a huge boulder heap. Near at hand was a group of four-horned deer with their ears cocked, gazing at the man-apes steadily. As the man-apes came nearer, the deer sniffed, wagged their ears, and then wheeled and trotted off.

The man-apes advanced through grass that reached to their waists. The grass was burned by the sun and beaten by the wind, and the aromatic odor of the grass was drawn forth by the heat. Swarms of small-winged insects, collected on the weeds and grass stems, flew into their mouths and eyes.

The man-apes waded the waist-deep river and came to the edge of the forest. The air held the odor of wild beasts, and the ground showed their tracks. Before entering the forest the leader stopped and studied the tracks. Among them was the track of a sabertooth. The leader hesitated, sniffing the air. The spoor, or trail, was warm; sabertooth might have circled and could be anywhere nearby. They moved carefully into the forest. The carpet of dead foliage rustled as they walked on it. The sunlight became dimmer as it passed through the leaves above. Among the rough, brown trunks overhead, monkeys swung from branch to branch.

The man-apes advanced through the deep greenish gloom of a winding game trail trodden deep by the feet of prehistoric monsters. The leaves to the left of the trail stirred. Then branches snapped and bushes rattled like hail as Teloceras, a rhinoceros with short legs like a dachshund, plunged out on to the trail. The man-apes retreated to thorny cover as he galloped by in the direction from which they had come.

Ahead was an open glade. Some big purple birds feeding on the ground ran off rapidly for a short distance, rose at an angle into the air, flew over the lofty trees, and disappeared. A leaf moved among the lighter bushes on the left. The man-apes halted and slowly retreated. Then, with a noiseless bound, the great golden bulk of sabertooth came into full view. It was flat-skulled, like a tiger, with dreadful pale-green eyes and two long, yellow fangs projecting downward from its upper jaw.

Now we realize why the man-apes always carried big stones in their hands!

As sabertooth charged, each of the man-apes threw his stone, and most of them found their target. The chunks of broken stone, four or five inches in diameter and each with a sharp edge or point, cut and stunned sabertooth. But, snarling and growling, he still reached one of the man-apes, brought him down, and buried him beneath his body. Several of the man-apes dodged into position and swung their heavy clubs with both hands at sabertooth's head. Sabertooth gave one last powerful struggle and then died.

The group went on, one of the man-apes limping from the terrible wounds he had received in the single moment that sabertooth had mauled him.

In the months that followed, the man-apes encountered many dangerous animals and had many occasions to throw their stones, which they did with marvelous speed and accuracy. But no animal they met was more dangerous than *Meganthropus*, the man-creature, twelve feet tall, who dressed in the skins of wild animals and carried a club. The cave of the giant was in a gorge which

ran far back into a hillside. Sunlight did not penetrate to the depths of the gorge, and trees and thick foliage hid the entrance to the cave. The man-apes had nearly stumbled into it when the terrible giant came roaring out after them swinging his club. His body was as hairy as that of a bear. His face was flat, with a protruding muzzle, and his ears were pointed like those of a wolf, but they were like human ears, too. Perhaps the man-apes could have killed him, but they suddenly became frightened and trotted on toward the south, vanishing like ghosts in the crackling underbrush.

The man-apes were of various sizes and bore different degrees of resemblance to man. Those of South Africa were the most apelike, and those of China more manlike. All of them were closer to the apes in appearance than to man. It is not known whether the African man-apes were an earlier species which slowly spread through the Old World tropics to China, or whether the Chinese species arose separately. Both had keen intelligence, an erect posture, and carried stones and clubs as weapons. Their bones and teeth were like the bones and teeth of man. But they were not man.



4

The ape-men

The man-apes were succeeded by the ape-men. The latter are called *Homo*, man, but not, you will notice, *Homo sapiens*, man who knows. We do not know where the man-apes came from. Neither do we know where the ape-men came from.

The distinguished anthropologist Carleton Coon, in his book, *The Origin of the Races*, asks a number of key questions, none of which has been answered. The questions can be summed up as follows:

Did the man-apes become men?

Or did some earlier man-ape evolve into Homo while later man-apes became extinct?

Did two races of ape-men arise at the same time, descended from two different man-apes?

Or did the ape-man arrive from somewhere else and kill off the man-apes?

When ape-man met man-ape did he kill him, or did he mate with the females?

Were the two populations fertile?

If so, says Dr. Coon, some of the peculiarities of the earliest men could then be easily explained. You will see that there is a certain amount of confusion. Millions of years earlier, four different kinds of reptiles became mammals. It is equally possible that man—ape-man, that is—had several distinct ancestors. Dr. Coon says that it is possible “that more than one evolutionary line within the Hominidae [man] could have acquired the erect posture independently, just as more than one reptile became a mammal. . . .”

In other words, there could have existed half a dozen manlike creatures each descended from a different man-ape, which in turn were descended from different early forms of primates.

The ape-man was manlike. His leg bone is quite unlike an ape's and in all respects like a man's. The muscle attachments show that he walked erect. He was an ugly customer, his face between an ape's and a man's, with a low forehead because the association-of-ideas frontal area of the brain was pretty well missing. Above the eyes the brow-ridge extended straight across in a simian

bar, although the ridge protruded forward instead of upward as in the gorilla. His jaws were massive and pushed forward. His canine teeth were not tusklike. His neck muscles were attached to a crosswise crest of bone on the back of his head, and his head was set upon his neck in an apelike manner that has not been seen in any human type. Certain features of the brain case show unusual enlargement of the acoustic area, so that there is little doubt that his hearing was extremely acute. His external ear was no doubt movable and large enough to aid in judging the direction of a sound. Perhaps the ape-man could hear a footstep at half a mile. You may picture him carrying a big club. Was he human? We have not yet decided on a definition of "human."

Mental processes—animal or human—cannot be ascertained objectively. But it is allowable to make inferences. The ape-man had no weapons except stones and clubs. The stones were struck against each other until they were broken into a comfortable size to fit the hand. Then, we think, the ape-man threw them to kill animals.

If our neighbor's mind is a mystery to us, how much greater a mystery is the mind of an ape-man. We know that his mind differed from ours not only in individual peculiarities but in another and strange way that we can only guess at. All our ideas about how he behaved must be based on our ideas of human behavior. This could easily lead us astray, but we have no other way to form an idea of what went on in his mind.

Man is very good at the association of ideas and at using the visualization of past experience, in the form of memory images, in solving problems. This activity

takes place in the frontal lobes of our high vertical foreheads. This is quite different from the slow formation of a habit of movement. Ape-men did not have high foreheads, and the suspicion is that they could not remember very far back or think very far ahead. This would not prevent them from chipping sharp edges on stones and throwing the stones, any more than it prevents chimpanzees from using certain tools.

It is perhaps too much to say that the ape-men never had ideas. But there is no evidence that they ever developed anything except the stone and the club as weapons.

Imitation can explain why stones were thrown for ten million years, and chipped in the same way for one million years. Professor Edward L. Thorndike, author of *Animal Intelligence*, says that the motions required in the throwing of a stone are "stamped in" the nervous system, that the habit becomes fixed through a gradual increase in speed and accuracy, and that there is a constant growth of skill through the mere repetition of a series of movements entirely aside from "knowing how."

If this is true, it would not only suggest an increasing skill in the throwing of stones, but also account for the minor improvement in the rough chipping of the sharp edges and points of the stones. It would not be necessary for the ape-man to think like *Homo sapiens* in order to chip stones and throw them well.



5

Sinanthropus and the giants

Two ice ages had come and gone and two more were yet to come when Sinanthropus appeared about 750,000 years ago—an ape-man who closely resembled Pithecanthropus, the ape-man of Java.

Sinanthropus was about five feet tall and had a broad face, high cheekbones, and a chin that sloped back sharply. He had a larger skull than Pithecanthropus, and his forehead was slightly more developed. A prominent bony ridge ran across the top of his head from front to back for the attachment of jaw muscles, and

the bones of his skull were thicker than those of any ape. There was another ridge of bone across the back of his head and around to each side for the attachment of neck muscles. If you put your finger above your ear and move it across the top of your skull to the other ear, you will find that your skull is smooth and rounded. The skull of Sinanthropus is not smoothly curved but has distinct bumps on each side.

Where is he to be placed in evolution? In some ways he is more primitive than the slightly earlier Pithecanthropus. Dr. Franz Weidenreich, who carried on the original investigation of Sinanthropus at Choukoutien, believed that Sinanthropus developed into modern man. But Sinanthropus had a gap in the teeth of one jaw to receive his canine fighting fangs of the other jaw when they were not in action, and even the earliest man-apes lacked this sign of the beasts.

Some scientists believe that Sinanthropus was descended from Pithecanthropus, but it seems more likely that Pithecanthropus was an "uncle," and that both types existed at the same time.

There were ape-men like Sinanthropus in many parts of the world. It was simply chance that scientists found the ones in China.

In the limestone cave of Choukoutien, not far from Pekin, the bones of forty-two ape-men were found. All of them had died from being struck on the head with a blunt instrument. The skulls were found, but little else. The few bones that were not skulls had been chewed on the ends. That it had not been done by wild animals is shown by the fact that the bones had been split to get

at the marrow in a way that no animal can manage. It appears that pieces of skull had been dropped at random or tossed carelessly aside by other living things. Every skull had the base broken out, and the very small number of skeleton bones found in comparison to the number of skulls suggests that someone carried the heads to this cave to eat the brains at his leisure.

Did a young *Sinanthropus* couple, walking together in the forest, suddenly look up and see before them a giant carrying a club? There is some evidence that *Gigantipithecus* was living in China at that time. Dr. Pei, who discovered the first bones of *Gigantipithecus*, estimates him to have been about twelve feet tall. The giant's teeth, six times larger than the teeth of modern man, have been found. Fossils of another giant, *Meganthropus*, have been found in southeastern Asia, and scientists have deduced a race of giants from ten to fifteen feet tall. For the details of their appearance, we are left to our imagination.

There is a resemblance between the rock formations and fossils of India and Africa from which fact geologists have inferred that the two land masses were once connected by a land bridge. The German biologist Ernst Haeckel said that this would explain the distribution of lemurs. He went on to suggest that this sunken continent of Lemuria might have been the original home of man.

There exists a description of a Lemurian, from an unknown source, which, since we have no idea of what *Gigantipithecus* looked like, suits us very well as a description of him, provided we remember that it is fantasy.

He was between twelve and fifteen feet tall, with a brown skin, a flat face with a protruding muzzle, and small eyes set so wide apart that he could see sideways as well as forward. He had no forehead, but was furnished with a third eye in the back, which among us is still represented by the pineal gland.

My most violent quarrel with this description has to do with the eyes being placed toward the sides of the head. Hunting animals have the eyes set forward, while hunted animals, such as the rabbit, have eyes on the sides of the head. In my opinion giants should probably be classed as hunters. The description, of course, is pure imagination from beginning to end. But that there once existed many strange man-creatures, some of them giants, cannot be doubted.

By this time, the man-apes were extinct—or so it is supposed, although an eighteenth-century Chinese book describing animals (none of them fantastic or mythical), includes a picture of a man-ape standing on a rock with one arm raised, and describes him as a wild man who lived in the mountains. The philosopher Hsün-tzu (400 B.C.) states clearly that an ape which walked erect and was the size of a man lived in the Yellow River Valley in his time. Man-apes are also mentioned by other Chinese writers.



6

The Neanderthals

A half-dozen dark, hairy shapes moved like crippled ants across the ice sheet. If you had seen them you would have thought they looked like slender gorillas. Their savage black faces were thrust forward and the backs of their heads were buried in neck muscles so that they appeared to have no necks. Their foreheads were flat and retreating, their fierce eyes, set in deep sockets, blazed like coals from under the heavy, bony ridge that projected forward over their eyes. They walked with a

sort of bent-kneed shuffle, on the outer edges of their feet. The ice over which they traveled was formed of numberless blades and splinters which made their feet smart—they wore neither foot-coverings nor clothes.

It was deadly cold. The ceaseless snow howled over them, stinging their faces and eyes. Their hairy backs were clotted with ice where the snowflakes had melted and frozen again. Their features were frostbitten and their jaws were rimmed with icicles. Fifty thousand years of summer had ended, the palm trees were dead, the tree-ferns black and rotting, the undergrowth withered and covered with cold stuff. This was seventy thousand years ago, the Ice Age had come, and these dark hairy shapes were the Neanderthals.

They limped miserably on bleeding feet through a ravine, climbed a slide, picked their way carefully along a rocky ridge swept bare of snow by the wind, and took refuge beneath an overhanging rock.

This picture of Neanderthal is quite different from the usual one. Most books on the subject speak of Neanderthal as “man” and show him dressed in the skins of wild animals, making fire and cooking his food, holding long conversations with his son, Og, and killing the mammoth either with spears or by digging pits in the ground.

But it seems more likely that Neanderthal wore no clothes, did not make fire, dug no pits, knew no speech, and had no names for each other. In short, what evidence we have seems to me to point to Neanderthal having been an animal and not a man at all—an animal with much more intelligence than any animal now living

on earth, but whose intelligence was quite different from man's.

Of course, a great deal depends upon what we mean when we say "man," and the experts are unable to agree upon a definition. Darwin said that whether the various primeval primates ought to be called men depended on the definition of "human," and humanness is very hard to define. As we have already seen, definitions based on fossil teeth are unsatisfactory, and the supposed progression toward man from smaller brain to larger brain is interrupted by the fact that Neanderthal had a brain larger than ours. The size of the brain does not determine man.

Professor Raymond A. Dart, speaking of the efforts by various scientists to find a definition of man, says: "If anatomical means of separating man from apes has become useless, then fire-burning might conceivably be used in such a definition. . . ."

Now, although Professor Dart would not agree with the implied conclusions of this book, he does agree with the highest scientific principles when he says: "Knowing



the fallibility of human opinion . . . it generally proves valuable to explore the reverse of the accepted view."

Taking Professor Dart's remark as permission to continue, let us return to the gloomy, despondent, ice-encrusted Neanderthals shivering on their rock ledge, huddled together with their legs curled under them for warmth. One of them, whom we shall have to call No-Name, has an idea—not in the way you or I would have an idea, but nonetheless a small, genuine, if indistinct, memory image. Well to the front of the central groove of our brain, and in front of that part associated with the memory of muscular action, is the region of the brain that appears to be connected with planning future actions.

Unfortunately, No-Name's forehead was pretty flat there. The length of time he could remember backward and think forward was very short. Yet no action can be planned without picturing yourself performing that action, and the necessary prefrontal regions concerned with the association of ideas were nearly missing in No-Name's skull. Still—his skin remembered warmth! Furthermore, he knew exactly where that warmth was because perhaps his homing instinct unfailingly informed him on all matters having to do with direction and distance. Yet he did not at once start for the fire. It was the picture that eluded him. There was in his mind no picture of himself at the fire, or of what he would do there.

We have in our minds all sorts of memories we are not aware of at the moment but which we can bring into our conscious minds at will and use to make pictures of future actions. No-Name was a mile ahead of the other Neanderthals in this respect, but although he

was aware that something was fermenting in his head, he could not quite picture it. He had once been to a place where flames grew out of the ground like bushes. Although he could not know it, the flames were the result of natural gas escaping through cracks in the earth having been set afire once by lightning and now forever burning.

No-Name felt a chill, and then a fit came on him during which he imagined himself at the fire. He stood up and went off into the storm. The wind on his face felt like the blows of a small whip, and he had difficulty keeping on his feet for the ground played unaccountable tricks on him, sometimes settling under him with a crash. Stunned with cold, he stumbled along. He was going to the warmth.

He was gone a long time. The others heard him coming back and twitched their ears forward at the sound of his creaking footfalls half a mile away. When he came into view, they whimpered and smote themselves and thought he was mad and would surely die. He carried a long, dead branch he had wrenched off a tree somewhere and there was fire on the end of it. There was not the least sign of fear or alarm about No-Name. On the contrary, he seemed well pleased with himself and was smiling with his great mouth stretched from ear to ear. He gesticulated a great deal, pointing very often to the direction from which he had come, and tried to explain the whole affair. He put the burning branch down on the rock and fed it other branches, for he knew that fire sprang up only upon wood and grass and retreated from stone. They understood from his ges-

tures that they were to come near. When they were all around the fire, the air became warmer and the wind did not chill them any more. They all fell asleep except No-Name, who sat with smarting eyes, feeding his fire.



7

The beasts like men

There is no doubt that Neanderthal had fire, but there is no evidence that Neanderthal ever made fire. Symbolic and abstract thought are necessary to make fire, but not to keep one going. The mere use of fire does not by itself define man. Professor Dart says: "We have to consider whether using fire would imply anything unusual in terms of human intelligence."

A chimpanzee who smokes will light a second cigarette from the first. Dr. A. S. Brink, who conducted

many experiments with chimpanzees, speaks of their ability to prevent the spread of fire, their awareness that water controls fire or extinguishes it, and says that their spontaneous fire-killing and fire-carrying feats "demonstrate the innate ability of some chimpanzees to control fire to a degree far beyond what has hitherto been appreciated." Neither the control of fire nor the use of a club by a chimpanzee or by an animal more intelligent than the chimpanzee makes that animal a man.

Sticks interest chimpanzees. They will bang things with them or dig in the ground with them. A chimpanzee will break off a branch, hold it in both hands, and press the end of the stick into the ground with the tough skin of the bottom of his foot. Chimpanzees will also poke sticks into the nests of ground bees and withdraw them covered with honey. This is tool-using, which is sometimes offered as proof of humanness.

A chimpanzee will put one box on top of another in order to reach a banana, or fit two bamboo sticks one inside the other to make a longer stick needed to reach something at a distance. This is the kind of thought necessary to solve an immediate problem. But the chimpanzee does not abstract an idea for use later, and there is no reason to think that Neanderthal did, either.

What kind of a man is it who doesn't invent anything for a million years? According to scientists, fitting two sticks together to reach an object is the same kind and level of thought as the deliberate flaking of a flint, which is apparently all that Neanderthal ever did. Their rough-edged flints and stone "tools" are found all over Europe, Asia, and Africa. The stones are so similar to earlier

chipped stones that only an expert can see any difference between a stone chipped by a man-ape one million years ago and a stone chipped by Neanderthal 950,000 years later. Professor Dart asks: "How is it that he [man] at first learned so little?" A possible answer is, "Because he was not man."

The experts have divided these chipped stones into what they have termed "industries"—a word which immediately brings to mind a false picture of chimneys belching smoke and perspiring workers trundling hand-trucks. There were no chimneys or hand-trucks, and the various industries all consisted of knocking one stone against another—that, and nothing else. The oldest industry—from around a million years ago to 600,000 years ago—is known as the Villefranchian stage, and features very crude but nevertheless "worked" stone. The next 60,000 or 70,000 years is called the Abbevillian, followed by the Chellean, Acheulian, Clactonian, Lavalloisian, and a number of others.

Throughout the whole time the stones were the same—made by knocking flakes off a piece of flint, throwing away the chips, and keeping the core. The core was roughly pear shaped and had irregular, wavy edges. The rounded base fitted snugly in the hand, and the sharp edge could do a lot of damage whether the user threw it, or kept it in his hand and hit an animal with it.

During the Mousterian culture associated with Neanderthal, one side of the flint stone was untouched, showing the surface where it had been detached from the original block of flint. The other side had flakes pressed off to make a fairly regular sharp edge. The slight im-

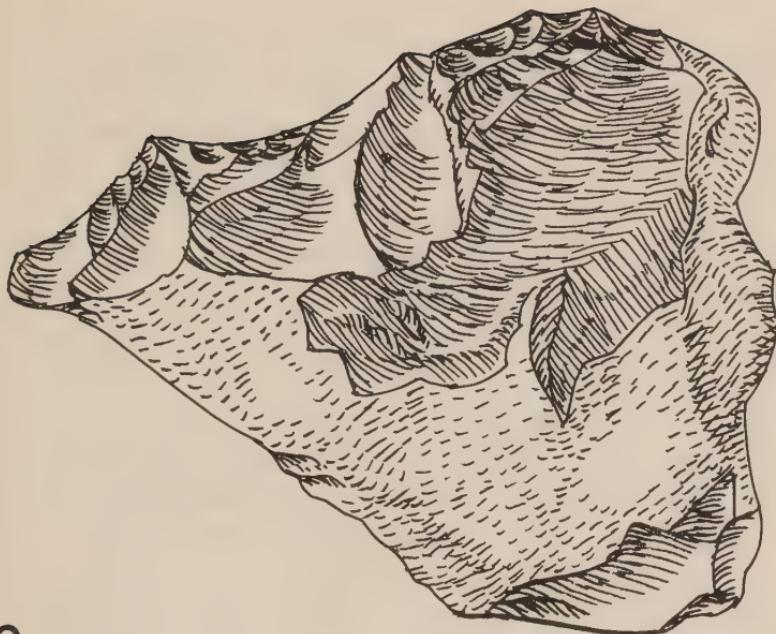
provement in the sharp edges and points of the chipped stones over a period of one million years can perhaps be accounted for by Dr. Thorndike's "constant growth of skill through the mere repetition of a series of movements entirely aside from 'knowing how.'" Professor Dart, referring to that period of one million years, says: "All he had added to his knowledge during that time was how to shape certain stone tools." But were they tools in the sense that Professor Dart means it?

Basing their theories on the conviction that they were looking at the fossil remains of our ancestors, some scientists have felt that the least they could do for the unaccountably slow-witted creatures was to credit them with the use of tools. Thus stones that came to a vague point were called "borers," and those with roughly chipped sharp edges were called "scrapers." Whatever they bored or scraped has unfortunately perished, and the less said about it the better. Humphreys says of the stones: "We are left to guess, from the shapes they were made to assume, the functions they fulfilled."

My guess is that the stones fulfilled two functions: They were held in the hand and cracked skulls, and they were thrown and cracked skulls. My assumption is that when one Neanderthal saw a food animal he would alert twenty other Neanderthals. They would all approach the animal, throw their stones with terrible force, and kill the animal.

The circus gorilla, Gargantua, in a tug-of-war, was given one end of a rope and with one hand pulled twenty men up to the cage. There have never been any scientific tests of a gorilla's strength, but chimpanzees

have been tested. The results are reported in Bauman's *Observations on the Strength of Chimpanzees*. The chimpanzees pulled on a rope attached to a dynamometer, and, on the basis of these tests, Bauman said that a chimpanzee is 4.4 times as strong as a man. This is not necessarily accurate, nor are these two examples very much on which to base a guess as to the strength of Neanderthal. His physique was impressive, however, and a fair guess might be that he was one-half as strong as a gorilla, or roughly ten times as strong as a man. Great bony spines for the attachment of muscles projected from his upper back vertebrae. The neck muscles were attached to a bony ridge far up the back of the skull, as in apes. The condyles (bony protuberances) of the arm are so much larger than man's that one can only wonder at the size of the muscles that must have been attached to them.



The throwers of stones

In the oldest terraces (water-borne deposits of silt, gravel, and sand, formed in river-valleys by flooding and erosion) of more than a million years ago—near what were once water holes, large piles of chipped stones have been found. They were chipped in the forms fondly referred to as “borers” and “scrapers,” but it is pretty obvious that they bored and scraped nothing. A man needs only one pointed stone if he is going to dig roots, one edged stone if he is going to scrape skins. These were

piled at the edge of the water hole so that they would be ready to throw at animals that came down to drink. The edges were chipped so that they would inflict more damage.

In terraces not quite so old there are incredible numbers of stones, all of them split, trimmed, and chipped. There are so many of them that it is as if factories had been turning them out for centuries without ceasing. Humphreys remarks on "the appearance of exactly similar types in all the main continents of the world, and their remarkable abundance compared with the very scanty remains of fossil man." Dr. Carleton Coon says: ". . . Tools are more abundant than human bones . . . during his lifetime a hunter made thousands." He adds that there were "thousands of tools for each living individual."

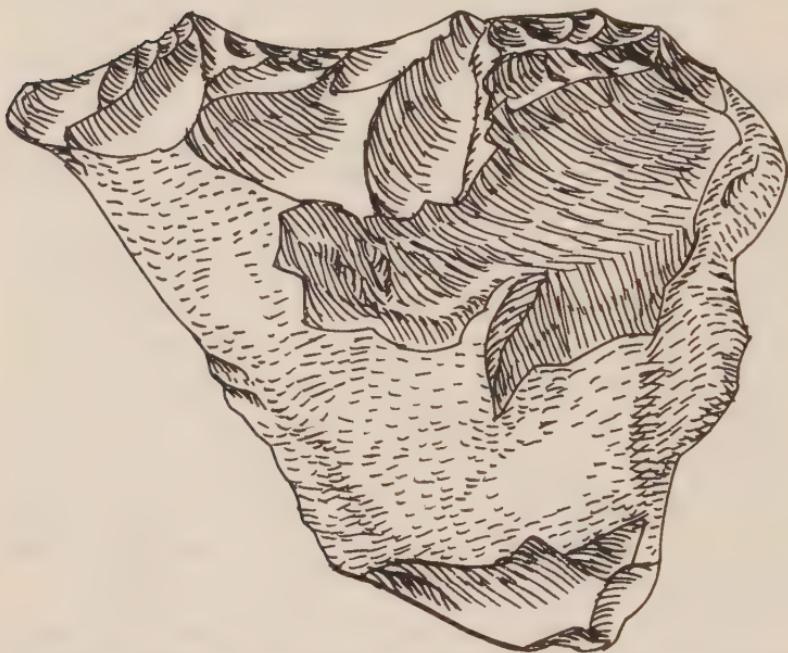
Assuming that man-creatures threw stones for a million years, how well did the champ, Neanderthal, throw stones? Baboons and chimpanzees throw stones. When attacked, baboons do not run. They go up on high rocks, form a group, and turn to watch. It is obvious that they are appraising the situation. When one of their number has been cut off from the troop by a hunting leopard, they have been seen to approach the leopard in a group, throwing stones so effectively that the leopard has been chased off leaving his prey unharmed.

The baboon is not very well constructed for throwing stones, but man is and Neanderthal and the ape-men were. The upright position and the general arrangement of the hip bones are important in throwing a stone, a movement which starts at the ground with the foot and ankle and requires free action of arm and hips.

Neanderthal is said to have killed mammoths by digging pits in the ground and allowing the mammoths to fall into them. Those who say it are forced to that conclusion because they know that Neanderthal had neither the spear nor the bow and arrow—there is no evidence that any Neanderthal stone was ever hafted with a handle. But the kind of thinking involved in a planned action like digging pits to trap mammoths would have left other evidences of the same kind of thinking, and there are none. We know that Neanderthal did kill mammoths. We just don't know how. Maybe, some scientists say, Neanderthal got up on a cliff and when a mammoth walked by underneath, he dropped a rock on him. These scientists have gotten around to my main point—mammoths were killed with rocks. But the rocks were not dropped from cliffs—that would involve too long a wait. The rocks were thrown.

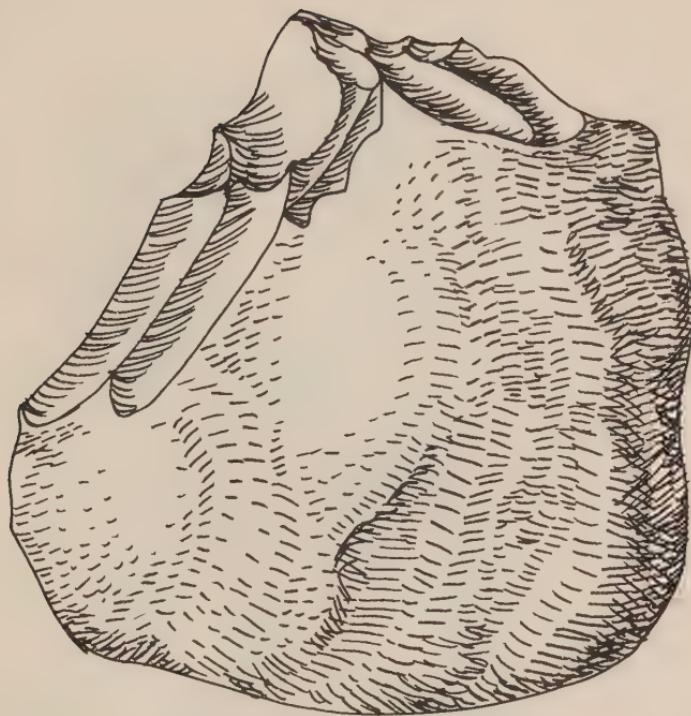
A modern-day pitcher has thrown a baseball clocked at ninety-eight miles an hour. No doubt, a pitcher ten times as strong could throw a baseball much faster. But more than strength is involved. A cat is faster than a man because his muscles are attached differently. A cat can easily touch your hand before you can draw it away.

Neanderthal's muscles were likewise attached differently from ours, and after a million years, perhaps he developed lithe, animal muscles especially adapted for throwing stones. We have already assumed that he was roughly ten times as strong as a man. You can pick your own rate of miles per hour, but a stone four or five inches in diameter thrown by a Neanderthal would be a deadly projectile, and a group of Neanderthals throwing stones could bring down a mammoth.



A stone chipped and broken by the forces of nature (shown actual size).

Most of the stone tools have sharp edges or sharp points, and this leads one to wonder about the Neanderthal's skill in throwing. It is not too difficult to imagine that the stones were chipped and broken because Neanderthal discovered that a sharp point or edge did more damage, and that with practice he could control the turning of the stone in the air and make it land on the target point first. His race had practiced throwing stones for a million years and it is remarkable what practice can accomplish.



A stone chipped by the man-ape, *Australopithecus* (shown actual size).

A modern pitcher throws something called a palm ball, which is so controlled that when it is released it hardly turns in the air. If he had thrown nothing but palm balls from the time he was a boy, and had thrown them every day, he would be able to throw a pointed stone so that the stone would hit point first. Neanderthal perhaps threw a stone like a palm ball, two hundred miles an hour, and, three times out of five, made it land point first.



A stone chipped by the ape-man, Sinanthropus (shown actual size).

Scientists dig up too many broken skulls for this not to be likely. Bear skulls found near Mixnitz, Austria, show healed fractures. A bear skull found at Brno, Czechoslovakia, had a stone embedded in it point first. There is no evidence that the stone had been used to punch holes in a leather vest. Near Florence, Italy, there is a cave which had been sealed up by a thirteen-foot wall of rock for seventy thousand years. On the smooth



A stone chipped by a Neanderthal man, and an arrowhead chipped by Cro-Magnon man (both shown actual size).

walls of the cave there are charcoal circles which had apparently been used as targets.

Now let us consider what Neanderthal looked like. Dr. Hooton, one of the leading authorities on the subject of Neanderthal, says: "The thigh bones are strongly bowed forward as in apes. . . . In their stumpy, curved form they recall the gorilla and the chimpanzee. . . . We no more know whether Neanderthal was covered with hair than we know the color of his eyes or the color of his skirt, but it is probable that his skin was black and that he was covered with a thick coat of furlike hair."

Dr. William Howells, Harvard professor and ex-president of the American Anthropology Association, says,

The best we can hope for is that during the last glacier one of them might have had an accident . . . someday to come to light in a condition of icy freshness like the famous preserved mammoths. Looking at the primitive remains of, say, Neanderthal man, it is likely that he had a regular pelt for hair and skin which would have made him look very much like an ape. . . . The only restoration that hints at his tint gives him a white skin, like a European, but that is perhaps the least likely color. . . .

Says Dr. Hooton:

On the whole, Neanderthal man must have been a rather gorilla-like type. . . . Some anatomists model reconstructions of fossil skulls by building up the soft

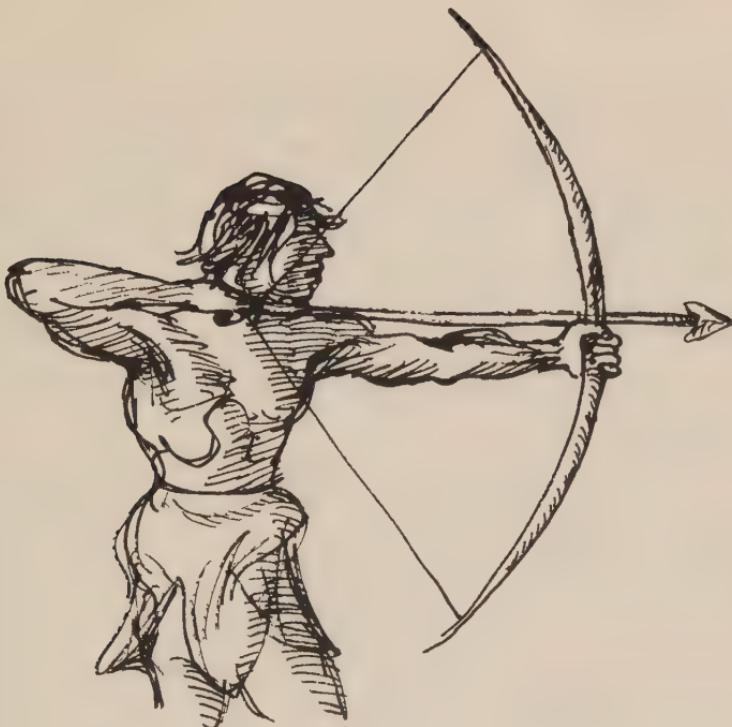
parts of the head and face upon a skull cast and thus produce a bust purporting to represent the fossil man in life. . . . When it is considered that we usually recover only fragments of skulls, even the reconstruction of the skull . . . leaves room for a good deal of doubt as to the details. To attempt to restore the soft parts is an even more hazardous undertaking. . . . You can, with equal facility, model on a Neanderthal skull the features of a chimpanzee.

Certainly Neanderthal was not as presentable as he appears in book illustrations. From the time the first Neanderthal skull was found, people interested in finding a man-creature from whom we might be descended have assigned everything short of a stiff collar to Neanderthal on the assumption that he was a man. His likeness in busts in our museums has been pushed as far as possible toward the human. Under the loving hand of the sculptor, there shines from the eye of the Neanderthal a great intelligence.

In the same way and for the same reasons, Neanderthal's backers claim that he must have had speech. I see no reason to think so. The usual argument is that he was a hunter and that to cooperate in hunting requires speech. But lions, wolves, and baboons cooperate in hunting without the need for articulate speech. Every one of the living apes has the jaw, tongue, larynx, and associated muscles capable of producing forty separate sounds—more than we use in our speech. They can match colors, and have monocular, binocular, and stereoscopic vision essentially the same as man's. There is

nothing to prevent a gorilla or a chimpanzee from developing a culture except an inferior brain. It is this difference which keeps them from using those attributes they share with man, and Neanderthal probably had the same kind of animal brain, though better.

Professor Dart says: ". . . There is no technical reason for imagining that Neanderthal man had any greater cultural demand for articulate speech than [the man-ape] *Australopithecus* . . . articulate speech came only about 25,000 years ago and was preceded by about a million years of gesture and babble."



9

The Cro-Magnon men

During a mild phase in the last glaciation, an event took place that is perfectly clear in the minds of all scientists—Cro-Magnon man appeared and Neanderthal disappeared. Cro-Magnon's appearance was sudden, and no one knows where he came from. Neanderthal's disappearance was equally sudden. H. G. Wells, the English author who wrote *The Science of Life* and *The Time Machine*, believed that Cro-Magnon killed all of the Neanderthals, but he did not supply a motive.

Cro-Magnon man was like us in all details. Dressed in modern clothing, he would attract no particular attention on the street. All the males were about six feet tall, of athletic build, with a fine forehead and a well-developed lower jaw and chin. The skull is high and well-rounded and the brain larger than any found today. What previous man-shaped creatures had been unable to accomplish in 500,000 years now took place instantly—*inventions*.

The inner drive of man cannot be accounted for. However, the Cro-Magnons were skillful hunters and weapon makers with a big bag of tricks—spears and fish hooks, the barbed harpoon, and—what is perhaps the greatest invention in the history of the world—the bow and arrow. In a short time they had bone and ivory beads, pins, needles (exactly like ours except that they were made of bone instead of steel), necklaces of amber, and bracelets of polished marble. There was music played on rattles, whistles, flageolets and drums.

If Cro-Magnon was so bright, you may ask, why was he living in the woods? When Cro-Magnon appeared on the scene, there wasn't anything except woods and the tundra. There were no cities, no roads, no houses, and no stores. If he wanted something he made it himself, and he made it from the materials at hand.

People like ourselves, set down in a wild landscape, would need a little time before building cities. The first necessity is to eat, and this is not so easy to accomplish. Just to exist in such circumstances is difficult. The hunting and snaring of animals is a skilled and dangerous occupation. Furthermore, there are only so many game

animals in one location, and when they are eaten one has to move on.

The first Cro-Magnons were forced to be on the move constantly and to lead a nomadic life. All their attention had to be focused on making weapons and securing game. Nature pushed them from spot to spot, and for a while there was no time to build cities. The men hunted and the women collected berries, vegetables, fruits, and firewood. The forest suppresses most ground vegetation and most fruit is high in the trees. Most forest vegetation is not suitable for food, and the food-bearing trees are widely separated. There cannot be civilization until permanent homes can be set up. The Cro-Magnons could not build permanent homes until they could escape from the constant necessity of finding food.

Their first weapons were made of flint. Flint is a dark gray or brown rock harder than steel. Flint is brittle, and heavy blows will detach flakes. A piece of flint can be roughly shaped by blows and then finely trimmed by pressing off small flakes. The working of flint by the Cro-Magnons was quite different from anything that had gone before. Not only was the method of work different, but for the first time blade tools appeared. Bone and antler were much used for these.

Flint picked up from the ground where it had been exposed to the weather did not make as good weapons as flint fresh from the earth, so the Cro-Magnons became miners. The best flint beds were found about thirty feet below the ground. Using a deer antler pick and the shoulder blade of an aurochs for a spade, Cro-Magnon man sank shafts through beds of inferior flint to get at the good

flint. At Spiennes, Belgium, the Cro-Magnon went through ten beds of poor flint before reaching the good flint. He built shafts thirty feet in diameter at the top and ten feet in diameter at the bottom. When the bed of good flint was reached, horizontal galleries thirty feet long and five feet high were driven through it.

The Cro-Magnon used his flint weapons to kill animals for food.

At Predmost, in Moravia, the bones and tusks of more than one thousand mammoths as well as the skeletons of many cave bears have been found. Predmost was situated on one of the great game trails of prehistoric Europe. As winter came to the plains of Poland, great herds of mammoths and reindeer, followed by such large carnivores as the lion and the wolf, moved south, and their way led past the caves of Predmost.

The Aurignacians of Predmost not only ate well, but were also artists. They engraved designs into bone and ivory and painted. We have some of their stone palettes with the paint still on them. The women wore bone pins in their elaborate hair-dos, as well as necklaces and bracelets.

Because most of our finds of Cro-Magnon man are discovered in caves, it is supposed that all Cro-Magnons lived in caves. A large dry cave made a good home, and where they were available the Cro-Magnon used them. But there is evidence that they also lived in houses. Several structures of this period have been found in the Ukraine. A Cro-Magnon Solutrian village has been discovered, and one of the houses is reasonably well preserved. The house consisted of two oval-shaped rooms.

Benches circled the walls of the rooms, serving as both seats and beds. A column of mammoth tusks supported the roof, which apparently was covered with sod or turf.

There is some evidence of tents made of skins—especially rings carved into the walls of cliffs which were probably used to anchor the tents.

Cro-Magnons who lived in caves often spread layers of stones on the floor, forming a sort of flagstone pavement. Near the entrance of the cave was a hearth which was sometimes dug into the ground and lined with stones. Stone lamps and juniper torches were used for light.

That *Homo sapiens* was now present is clear. It is assumed that he was busy killing off Neanderthal, since in a short time Neanderthal was gone. It is difficult to believe that people like ourselves would deliberately exterminate other human beings, even if Neanderthal was carrying off Cro-Magnon women. However, it is not difficult to believe if, in the eyes of the Cro-Magnon, Neanderthal was definitely an animal, like a gorilla, and covered with a thick pelt.

In France the Cro-Magnon were over six feet tall and had small faces. In other parts of the world ten kinds of men closely related to Cro-Magnon have been found and are so like us that it is perfectly correct to say that with them present-day man began. We will continue to use the term Cro-Magnon to embrace all of them.

The Solutrians invaded western Europe armed with spears. They appear to have been few in number but in some places seem to have driven out the Aurignacians. The Solutrians appear to have been a warlike group which changed its ways and became famous for mar-

velous flint blades. These blades have never been surpassed, not even by the Egyptians at the height of their flint-making skill.

The Solutrian blades were shaped like laurel leaves and show a fine detail of design, done by pressure flaking, all over the blade. The flint points vary in length from an inch or two to twelve inches. The large points are shaped at the sides to form a tang to fit onto a wooden shaft to make a spear. Hunters from hundreds of miles away came to the Solutrian district to trade furs and other things for the famous Solutrian blades.

The Solutrian culture was followed very shortly by the Magdellanian. Reindeer herds had grown enormously, and the Cro-Magnon people used antlers and bone slivers as punches. From marks left on the joints of bones by flint knives, we can see that the Magdellaniens skinned their game. There were ivory sewing needles made from the tusks of mammoths. The punches and needles show that skins were sewn with either threads or leather thongs, or perhaps with plant fibers. It is certain that they used the tendons of reindeer. That they used bear skin rugs is probable since on the flagstoned floors are found the claws crushed on the ends with flint marks on them, suggesting that these remnants were left attached to the skins just as they are in today's bear skin rugs.

There was little forest in France, and the landscape was tundra-like, with clumps of evergreen, dwarf birch, willow, lichen, and reindeer moss. The ice sheet was retreating. The sea level fluctuated. The Rock of Gil-

bralter rose and closed the Strait, and then sank part way down again. The island of Sicily was covered with water. The glaciers were still heavy in the Alps and the Pyrenees. In the streams fed by melting ice were trout and salmon. The plains were filled with horses, wild cattle, bison, mammoths, woolly rhinoceroses, and antelope. Herds of reindeer predominated and were hunted by packs of wolves and by the cave lion, a lion much larger than the one that lives today. In a short space of time the Cro-Magnon domesticated animals, cultivated food, and used nets, fish-traps, and canoes.

The date of Cro-Magnon's arrival on the mainland of Europe is in as much doubt as where he came from. But soon there were groups of Cro-Magnon men all over the world, some more advanced than others. Just how they developed into races is not clearly seen, and there are many unexplained fossils.

In two caves at Mount Carmel, two miles from the Mediterranean coast, there was found a group of skeletons showing a mixture of Cro-Magnon and Neanderthal characteristics. McCown and Keith are of the opinion that the skeletons represent a single race between Cro-Magnon and Neanderthal. Dr. Ivar Lissner says of the Skhul man of Mount Carmel, ". . . It is possible that he represents the outcome of cross-breeding between the Cro-Magnids and the Neanderthaliens."

That western Europe was one of the great zones of near-future civilizations is obvious from a study of the great caves of France and Spain. But it was to the south, in the Eastern Mediterranean, that the early civilization which would lead to Crete, Egypt, and Athens was beginning.





10

The mystery of the caves

Aurignacian statues and beautiful engravings have been discovered at Malta, a group of three islands in the Mediterranean Sea off Sicily. Engravings of horses and deer and a rhinoceros have also been found on pieces of bone, and so has a bone silhouette of a mammoth which is covered with a series of fine engraved lines.

The Solutrians, who lived at the same time as the Aurignacians, were once thought to have been inartistic

but now we have found many reliefs of animals in the caves of Isturitz, Basses-Pyrénées, Le Roc, Charente, and other places. Solutrian engravings on stones have been discovered near Bourdeilles. In many cases one animal has been sketched on top of another, and they look to me like homework of some kind.

The Magdellanians were later than either the Aurignacians or the Solutrians and there exist many of their bone engravings of horses and reindeer as well as geometric patterns of zigzags, straight lines with dots at intervals, spirals, and other patterns such as students might make if they tired of drawing horses.

It is thought by most scientists that such drawings and engravings have something to do with magic and superstition. They base their idea on the magic and superstition of some savage tribes of today, forgetting that the Cro-Magnon were not savages but civilized people like us. It should be pointed out that all the drawings referred to so far were done by Cro-Magnon people at home, and not in the caves that some people regard as temples, such as the caves of Altamira, in Spain, and Lascaux, in Dordogne, France.

The cave drawings at Lascaux and other places have caused a great controversy. Nobody knows why they are there or for what purpose they were done. Some authorities say that it is merely the expression of a naturally artistic people who, because of a love of beautiful things, wanted their cave walls decorated. Others have suggested that the cave art was done to commemorate successful hunts, and still others believe that the drawings represented magic to ensure successful hunting.

Since this is all speculation, and since one of the purposes of this book is to stimulate new speculations, we will make a suggestion of our own. The caves were schoolrooms.

Everybody is agreed on the excellence of the pictures on the walls (blackboards?) and has no quarrel with Professor Hooton when he says that they were ". . . from the very beginning done with boldness and realism [by the teachers?] . . . with a delineation of animal form that was not afterward equaled until the Minoans of Crete produced their masterpieces."

Herbert Kühn reflects a popular view when he says that the caves were "places where beasts were enchanted and by supernatural means brought under the power of men." Then Mr. Kühn says: "I have often sought paintings or engravings in neighboring caves . . . always in vain. It is a most remarkable thing. . . ."

This fits in very well with the idea that the painted caves were schools. One school to a neighborhood would be enough. Mr. Kühn's idea is slightly different, for he says, "The reason for the limitation of the pictures to certain sites must surely have lain as much in the sacredness of the site as in the religious character of what was there drawn. . . ."

Possibly the sessions were not of a religious nature, but boys were being taught how to hunt. The Cro-Magnons were hunters, which means that they went out to kill large dangerous animals which had horns and hoofs. There were no picture books in those days, and it was necessary and important for the young Cro-Magnons to be able to recognize without question the various ani-

mals and to know the best way to kill one instantly. In many of the animal drawings the heart is prominently placed in the correct position.

Almost all the animals shown in the cave drawings are food animals—horse, ox, bison, deer, ibex—and Fernand Windels, in his book *The Lascaux Cave Paintings*, says,

Together these make up a carefully chosen hunter's quarry, difficult to come by and upon which the whole heart of Paleolithic man must have been set . . . It is indeed around hunting that all the interests of Paleolithic man are concentrated. The whole life of the tribe depends on the game which he brings home. The meat is used for food, the skins for clothing; needles and awls are made of the bones; the tendons serve for sewing . . . the fat is used for lamps. On success in hunting the life of the group depends. But animals are swift and strong creatures; they know how to hide and fight.

It is obvious that the art of hunting would be taught. The proper use of weapons requires long years of training. In the days of knighthood, a young man did not simply take up a sword, shield, and lance that he had never used, climb on a horse, and ride off. He went to school and learned the use of his weapons, as well as how to recognize various pennons, designs on shields, and a great deal more having to do with his life as a knight.

Similarly, no Cro-Magnon youth was simply handed a flint spear, told to go kill an aurochs, and warned that

while he was about it he should look out for cave lions. There was a long period of instruction during which he learned to use the bow and arrow and the spear under the careful eye of older hunters. So the painted caves look to me very much like classrooms where the young hunter learned to recognize various animals, and the best way of killing them rather than simply wounding them. Kühn says: "Many of the prehistoric pictures show beasts struck by weapons. . . . Curiously enough many of the paintings and engravings actually have been shot at . . . riddled with scores of holes."

This sounds like practice by a group of students under the careful eye of an instructor. The Cro-Magnon lad who marched up to the "blackboard" and put his scratched dart on the wrong animal or in the wrong place on the right animal, would get an "F."

Windels says that "the scoring, scratches, and various kinds of marks can in most cases be understood without doubt to be evidence of missiles, throwing spears, or darts."

In the cave of Montespan, Haute Garrone, France, the sculptured figure of a bear has been pierced with forty-two holes. In the same cave there are some horses modeled in relief, lions modeled in clay, and various sketches. Altogether there are fifty carvings of animals and thirty clay sculptures. In one group there are three large statues of lions each measuring five feet long and three feet high. I doubt that these were constructed "to ensure success in the hunt." I think they were very practical demonstration models. They are partially destroyed, the neck and breast of the lead lion being riddled with innumerable



This famous picture, discovered on the wall of the Trois Frères cave in southern France, is generally supposed to represent a sorcerer.

spear thrusts. The clay statue of the bear has also been mutilated by more than thirty spear thrusts. Most of the other drawings and statues have been "wounded." Experts have commented that the deep marks in the clay statues of animals in the Montespan cave show that the spears were always skillfully directed at some vital spot.

The figure of the bear was apparently very realistic. A bear's skull was found at the foot of the headless clay statue, and in the neck there is a hole apparently made



“The Flute-Player” is a second drawing found in the Trois Frères cave and is also supposed to represent a sorcerer.

to receive a wooden peg to support the head. It is reasonable to suppose that a bearskin once covered the clay dummy.

Did the boys have "slates" on which to practice their lessons? Kühn says that in the Sainte-Eulalie cavern

side by side with the rock pictures there exists a whole series of small . . . engravings and drawings on stone or horn, on bone and on ivory. . . . A whole series of stones has been recovered on which there are mazes of drawings, inextricable masses of intermingled lines . . . The slabs seem to have been used again and again.

This does not fit in at all with the usual picture presented of a witch doctor jiggling around in front of a wall painting with a group of superstitious hunters mumbling to themselves in the hope that such folderol will help them kill a deer.

The idea that such witch doctors existed is based almost entirely on several drawings and paintings of figures combining the features of both animals and men. However, in none of these drawings has the artist made any attempt to suggest that the animal parts are costume. It seems to me that these sketches might have been made by an instructor in answer to the question: "What was Neanderthal like?"

At that time Neanderthal had probably long since disappeared from the earth. If the legend that he was half human persisted, the instructor might well draw his own fanciful idea of a half-human creature. Such

legends clearly existed from the earliest times and became part of Greek and Cretan mythology. The later artists represented the half human in the same way. Gorgons, harpies, centaurs, Pan, the minotaur, and other representations of the half human may all be nothing more than attempts to illustrate the dim memory of Neanderthal.

It is interesting to note that one of the "witch doctors" has exactly the same construction as a minotaur—the body of a man and the head of a bull. Commonly known as "The Flute-Player," most artists would agree that the "flute" is actually a line meant to show steam coming from the nostrils—which may or may not mean that the instructor was commenting that the climate was very cold when Neanderthal lived.

The Cro-Magnons were practical, highly intelligent men, and I see nothing whatever to support the idea that superstition, magic, and witchcraft played any part in their lives, except a tendency by some anthropologists to look to present-day degenerate savage tribes for clues to the life of Cro-Magnons. The Cro-Magnons were about as primitive as you or I.

Professor André Leroi-Gourhan, director of the Sorbonne's Center for Prehistoric and Protohistoric Studies, says: ". . . Everything in prehistoric art is strange. One loses many illusions—that these men were simple primitives; that their art was simple and ingenuous; and the illusion, too, that we, when moved to comment on them, can ever be quite sure of our ground."

Windels feels the same way when he discusses the many cryptic symbols and signs found in association

with the cave drawings which may be part of a written language and, for the purposes of our speculation, may have been placed near the drawings by instructors as comments on the drawings. There are rectangles, criss-crosses, shapes like little pitchforks, series of disks and dots, lines and patterns of lines. Every one of these shapes, by the way, shows up later in the undeciphered Carian script and in the undeciphered Cretan-Minoan Linear Script A.

Georges Bataille, author of the book *Lascaux, or the Birth of Art*, wonders if the signs on the cave walls are ". . . perhaps ideograms . . . some sort of crude system of writing." Windels says that we do not know the meanings of the various

emblems, dots, forked strokes, crosses, twisted and wavy lines, etc., scattered over the walls of the chambers and known to occur in the majority of decorated caves. We are ready to attribute to them a magic significance in any case, but prehistorians . . . at a loss for an explanation, rarely fail to ascribe to ritual or magic what they do not understand. . . . These signs, identical from chamber to chamber, and from cave to cave as well, have not been drawn by chance.

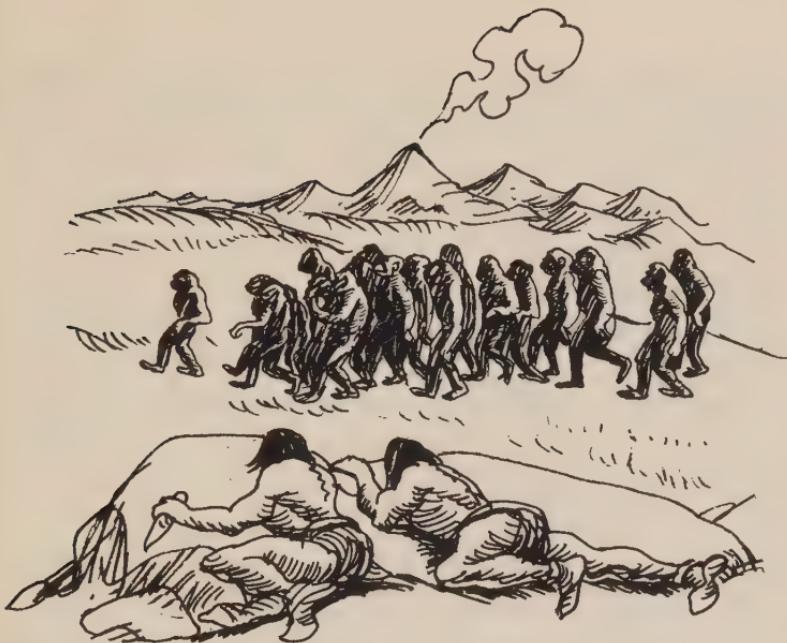
That it is a written language, and the oldest written language we have any example of, is almost a foregone conclusion.

The pictures in the Feline Chamber in the Cave of Lascaux might be called the "Class in Dangerous Carnivores," or "How to Avoid Getting Killed." Most of

the drawings in Lascaux are of food animals, but Windels points out that the pictures in the Feline Chamber ". . . form a group that is rather distinct . . . in the choice of subject and the very large number of emblems represented. This arrangement of a far corner of the sanctuary full of a variety of symbols is not peculiar to Lascaux but is also found in other Paleolithic caves."

The drawings in the Feline Chamber show six cave lions with short, round muzzles and raised ears. This was the senior class, and one can understand why the instructor wrote more on the blackboard. When it comes to defending yourself against a charging cave lion, there is no such thing as knowing too much.





11

The ancient men

The great majority of anthropologists vaguely believe that Cro-Magnon developed on some continent other than Europe. But, when pressed, they admit that there is no other continent which he could have come from. Neanderthal was everywhere. We find plenty of evidence of Neanderthal, but there is no sign of Cro-Magnon. Then, suddenly he is there.

Dr. Carleton Coon, in *The Origin of the Races*, says: "It is hardly likely that Europe was the center of Cau-

casoid evolution because the succession that we find is disorderly. The changes in tool industry are in some cases too abrupt to have been the product of local technological evolution; yet the tools all emerge from a single set of traditions."

Cro-Magnon man made his sudden and inexplicable appearance on the continent of Europe fully equipped with tools that had been developed elsewhere—such as the bow and arrow. Tools that had emerged "from a single set of traditions." Obviously we are in need of some more speculation.

For a long time the Scottish anthropologist Sir Arthur Keith was the only distinguished scientist who insisted that *Homo sapiens* had made his appearance much earlier than Neanderthal and that Neanderthal was a paleontological hangover from some parallel line of evolution. For want of a better theory, many scientists have at one time or another concluded that *Homo sapiens* descended from Neanderthal. Professor Weidenreich once wrote: "If Neanderthal man was not the ancestor of modern man, who was this ancestor?" But from time to time scientists found fossil men much older than Neanderthal showing all of the features of *Homo sapiens*, and of course suggesting that modern man had a much earlier origin than had been generally thought.

However, in one case after another, finds of *Homo sapiens* apparently dated from 200,000 to 400,000 years ago were dismissed because the exact geological age of the layer in which the bones were found was arguable. Now, however, there is proof: Professor Hooton refers to Swanscombe man, discovered in Swanscombe, Eng-

land, in 1935 as "one cast-iron, irrefragable case that serves not only to establish the main point of contention, but also to validate or, at any rate, to strengthen numerous other claims previously dismissed."

Fontechevade man, found in France, closely resembles Swanscombe, lived roughly at the same time, and was also found in a strata position about which there can be no dispute. Le Gros Clark, professor of anatomy at Oxford University, says that *Homo sapiens* existed before the appearance of Neanderthal, and, speaking of Swanscombe, says that "the oldest human fossils so far discovered on English soil" are "indistinguishable from modern man."

Both Swanscombe and Fontechevade resembled modern Europeans except that the bones of their skulls are thicker. They are the earliest fossil evidence of modern man from before the last glaciation, with high foreheads, and no heavy brow ridges. To quote one scientist: "They seem to have died out."

But suppose they did not die out. Where could they hide, leaving no further trace for 200,000 years? We have already seen that some land masses rose above the sea while others sank beneath the sea. The land areas that we have dug in, looking for prehistoric remains, can be represented by a few grains of sugar sprinkled on a tabletop. We have not looked at all beneath the sea for remains of prehistoric man.

It is impossible to say how many of those very early men existed. There were perhaps only a few hundred in the whole world. The Neanderthal was about to appear and spread over the whole globe. We cannot re-

construct the precise savagery of that ancient world. There is considerable evidence that it is beyond our imaginations. If *Homo sapiens* survived, it was perhaps under the most unusual circumstances. Furthermore, if he was a mutation, the new characteristics appearing in his species would quickly disappear through interbreeding unless he was isolated. A mutated gene can spread rapidly through a small, isolated population, increasing from generation to generation until the whole species has that mutated characteristic.

The most logical assumption is that he was separated from all other species by a wide stretch of water—that he crossed a land bridge which afterward sank beneath the waves, leaving him on an island where he developed in comparative security.

During this period, the foothills of the Himalayas rose six thousand feet. The Andes rose vertically several thousand feet more to their present height. Volcanic chains became active in the Mediterranean region. There are numerous records of individual islands raised above the sea or sunk beneath it. Fossils tell us that land bridges existed. When we find that some species of large animals lived in two land areas now separated, we know that at one time the two land areas must have been joined or the animals could not have passed from one to the other. North and South America were separated during the first half of the Age of Mammals. During the time of *Dryopithecus*, the Isthmus of Panama was raised above the water so that North and South America were joined, and such animals as the jaguar could walk from one to the other. At times of glaciation, the Bering

Strait was a land bridge, a broad, flat plain free of ice.

The lowering of the sea level by three hundred feet made dry land out of shallow sea areas and permitted migration. England was connected to Europe. The load of ice made Canada and Scandinavia sink. Where the ice was thickest, in the area between the Great Lakes and James Bay, Canada sank one thousand feet. When the ice melted, the area rose somewhat. Unmistakable records in the form of beach ridges and wave-cut cliffs have been studied and mapped. The shore of the glacial Lake Algonquin, for instance, is at an elevation of six hundred feet in west Michigan and fifteen hundred feet at Goudrian Lake, a recent upward move of nine hundred feet.

All this has been told to suggest that many other movements of land up and down were going on of which we have no knowledge. A land bridge could have existed, early *Homo sapiens* could have walked over it, and the land bridge could afterward have sunk, leaving these early men isolated on a large island where they could have pursued their development for more than a hundred thousand years.

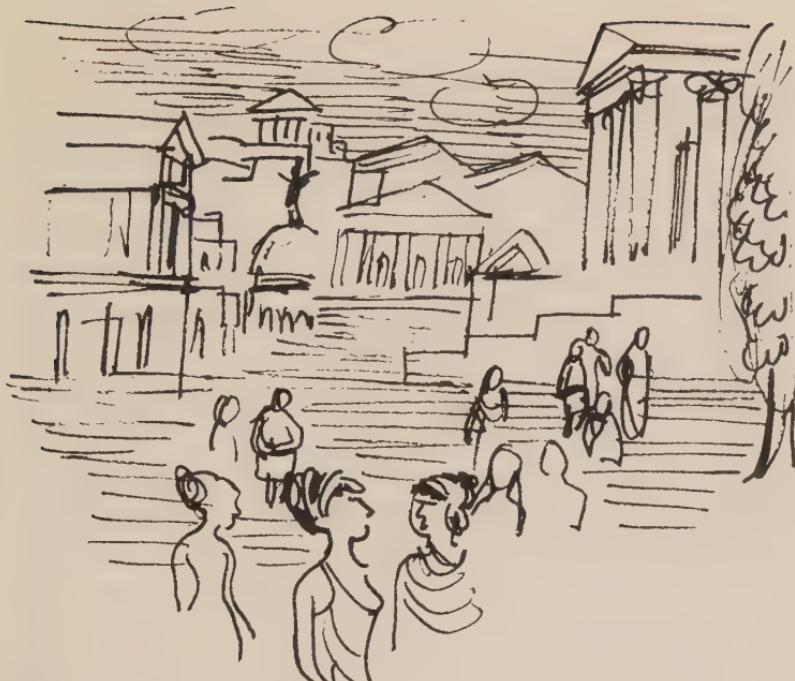
Atlantis is said to have been such an island. Did the development of Cro-Magnon take place on Atlantis? Were the tools that emerged "from a single set of traditions" developed on Atlantis?

Professor William Howells, speaking of Cro-Magnon's sudden appearance in Europe, asks: "Where had he been keeping himself?" and says that if we believe all the evidence,

then we have this species [Homo sapiens] in the second interglacial [about 250,000 years ago] replaced in the third interglacial by the Neanderthals, and returning after this usurpation to the ancestral demesne again during the fourth [last] glaciation. This is a little hard on the imagination. A possible explanation is that the advance of the third glacier would have had the effect of driving mankind largely out of Europe [to Atlantis?] and that on the reopening of the continent the Neanderthals got there first, Homo sapiens not returning until later [when Atlantis sank?] probably as a second incursion from the same source as the older one. . . . The background of Homo sapiens remains a great problem.

An ancient writer named Arnobius Afer wrote that ". . . ten thousand years ago a vast number of men burst forth from the island which is called the Atlantis . . . and . . . blotted out countless tribes."

Naturally, we are not going to take his word for it, especially since we have no idea where he got his facts. However, since it fits in with the hypothesis of this book, we will investigate further.



12

Atlantis

Accurate Greek history began about 900 B.C., when the Greeks acquired a written alphabet, and Egyptian written history dates back to 3000 B.C. Destroyed writings undoubtedly went back somewhat further, but before this we are in the province of oral history.

It should be remarked that in the time before writing, oral history was a highly developed and skillful art. We have grown to be lazy storytellers and are out of prac-

tice since we know that the history of important events is now written down.

There is a considerable difference between myths and legends as opposed to fantasies. Myths and legends are traditional stories handed down by word of mouth, and although they become garbled in the telling, they have some kind of facts behind them. Both Homer and Plato used traditions and rumors. What was behind the traditions and rumors will never be fully known. However, it should be noted that the story of Troy, which all archeologists agreed was myth, has now become history with the finding of the city of Troy and it now seems most probable that Achilles and Helen of Troy were real people. At one time the stories of Pompeii and Herculaneum were also thought to be myths.

No one knows exactly who Homer was. He is supposed to have been born about 1000 B.C., but there are many people who believe that the name Homer actually represents a long line of poets. The poems form part of a Greek cycle of epics—including *The Sack of Ilion* and others which are now lost—and existed for a long time before they were written down. Of them all only the *Iliad* and the *Odyssey* have survived complete. Not only Homer's story of the Trojan War but also some other stories, hitherto considered to be myths, have been confirmed by archeologists' recent finds.

There is some basis for an argument that the Greek gods were the original inhabitants of Atlantis. In Greek mythology the gods are not thought to have created the world but simply to have taken over its management. They lived on Mount Olympus and had palaces, storage

buildings, stables, and horses. The location of that particular Olympus is still in some question, though the Greeks located it to the west, in the ocean.

As the early stories were told and retold throughout thousands of years, there persisted in Greek mythology the idea of "half-human" monsters which were fought by the gods (Cro-Magnons?). The gods are depicted as using bows and arrows and spears, while the monsters are described as throwing rocks. The legends of the battles between the Greek gods and the Titans—which date from the very earliest times—may well be an ancient memory of the battles between the Cro-Magnons from Atlantis and the Neanderthals. A reference is made in the myths to the great speed with which the monsters could throw rocks. Some of the stories deal with the giants, who are described as wild, savage men. The origin of these vague, formidable beings is not known, but it is clear that they attacked the gods. According to the writings of Apollodorus, the giants were of formidable and monstrous shape, and part human. The giants are constantly spoken of as hurling rocks and producing a variety of grotesque sounds, unlike the speech of men. This is not at all bad as a description of the Neanderthals.

A good many legends of the coming of civilization to Europe seem to indicate the existence of Atlantis. Mythology relates that Zeus fell in love with Europa, changed his shape to that of a bull, and carried her on his back to the island of Crete. (Almost nothing is known or said about Europa, except that she gave her name to Europe.) There could be some significance in

this picture of Zeus swimming across water (from Atlantis?), carrying on his back what was to become Europe.

Zeus had three sons by Europa, one of whom was Minos, the King of Crete. He is said to have engraved his laws on brass, and Plato said that the laws of Atlantis were engraved on brass. Homer said that Minos came from an island to the west—that to the west lay ". . . the islands of the blessed along the deep swirling Ocean where the happy heroes dwell."

Accurate dates are hard to come by. The beginning of civilization in Crete has been guessed at in figures ranging from 6000 B.C. to 18,000 B.C. Copper was smelted in Egypt in 6000 B.C., and some Egyptian pottery of the same period is suspiciously the same in pattern, handles, and spout as Cretan pottery from an older period. Experts believe that the pottery was either copied or imported from Crete, which by itself would suggest that the flow of culture was from Crete to Egypt, instead of the other way around. Both Crete and Egypt had civilizations that seemed to get off to a flying start, and there are indications that the preliminaries took place somewhere else—preferably Atlantis.

If the story of Europa and the bull goes back to anything, it goes back to a very ancient occurrence. The bull appears constantly in Cretan art, and it is impossible not to recall the legend. On the pavement at the Palace of Knossos there have been found fragments of a vividly painted plaster relief of a charging bull. Also, one of the wall frescos shows an audience of court ladies and gentlemen, the ladies with puffed-sleeved, flowered, bell-skirted dresses, and jewels in their hair. They are

obviously attending some sort of event. On the opposite wall, facing it, another painted fresco shows a charging bull and three athletes. One athlete is grasping the charging bull's horns, a second is beginning a somersault over the bull's back, and the third is shown in the act of landing from a somersault on the balls of her feet. It seems quite certain that the three figures are intended to show three stages of an athletic feat. Cowpokes say that such a feat would be impossible—the same thing, you will remember, that used to be said about the four-minute mile.

Plato said that Atlantis "had been cultivated during many ages by many generations of kings." We are free to speculate that the hiding place of Cro-Magnon had been Atlantis, and that during his rise from a primitive condition to civilization he had domesticated the horse, cow, sheep, goat, and pig, and had advanced the cultivation of wheat, barley, rye, and oats from a wild state—and that when Atlantis sank, one of the places he reached was Crete.

Psonchis, the most learned of the Egyptian priests, spoke of an island called Atlantis, and referring to a time nine thousand years earlier said that ". . . no man could get to the island, for ships and voyages were not yet heard of." And that ". . . there occurred violent earthquakes and floods and in a single day and night of rain Atlantis disappeared beneath the sea."

Plato described Atlantis as being surrounded by a moat which served as a secure harbor. The *New York Times* of September 4, 1966, carried the announcement that a sunken island fitting Plato's description and be-

lieved to be Atlantis, had been found in the Aegean Sea seventy miles from Crete. It was discovered by a team of scientists led by Dr. James W. Mavor, of the Woods Hole Oceanographic Institution of Massachusetts, and Professor Anghelos Galanopoulos, seismologist at the University of Athens. To quote the *New York Times*: "Galanopoulos said it sank beneath the sea, wiped out within minutes by flood waves touched off by one of the most violent volcanic explosions in history."

The date given for the catastrophe is much too recent to fit in with the first appearance of Cro-Magnon man, with which the traditional time of thirty thousand years ago agrees much better. However all ancient dates are subject to controversy and are shifted forward and back, and perhaps this one can be too. If not, we shall have to look for another sunken island surrounded by a moat.



13

Conclusion

This book contains a theory. Simply stated, it is that we are related to none of the manlike fossils dug up so far, and that their resemblance to us is due to a physical development along the same lines.

It is not impossible that our ancestry goes back in a straight line to a small, intelligent dinosaur form walking on its hind legs, and already using its superior brain to survive. Perhaps each of the dinosaur forms around it pursued its own evolutionary development which, mil-

lions of years later, was to result in various animal forms. One of these animal forms might have been a man-ape totally unrelated to us.

The theory further suggests that the species of man represented by Swanscombe of England and Fontechevade of France battled swarms of the early Neanderthals. That some 100,000 years ago they crossed a land bridge which shortly afterward sank, leaving them isolated on Atlantis. There they developed in comparative security and that some beginnings of civilization took place. Some thirty thousand years ago Atlantis disappeared in a catastrophe of earthquake and volcanic activity. In the resulting flood many Atlanteans escaped in boats—to the continent of Europe, to the islands of the Mediterranean, and to the coast of Egypt.

That Cro-Magnon again had to do battle with the Neanderthal (Titans?) and that they were now well equipped to do so with bows and arrows and spears. The Greek gods were Cro-Magnon men whose deeds in killing the "half-human" monsters were embroidered and exaggerated by naïve imaginations until they resulted in the Greek myths—wherein the thunderbolts Zeus was so fond of hurling, for instance, were perhaps no more than the marvelous bows and arrows of the Cro-Magnons.

While the various speculations in this book form a theory, I do not urge you to accept it. My purpose has been simply to point out that the generally accepted picture of prehistoric man and his development is not necessarily correct. At every stage of history there is an accumulated mass of established tradition which results

in the assumption that the current explanation of things is the correct one.

Did we come from Atlantis? Until we explore the depths of the sea and come across the Temple of Poseidon, I will reserve judgment. The past needs exploring. Those of you with imagination and the ability to wonder do not come too late. The Age of Discovery is just beginning. There are more dinosaurs unfound than found. There are more cities buried than we have dug up.

Dr. Roy Chapman Andrews, former director of the American Museum of Natural History, says that there remain hidden "all of the links between man and his early ancestors," and that "the direct ancestor of modern man's species is not known."

We need both new facts and new theories developed from those facts. Much of the important work in science has been done by young people who suddenly realized that they had an aptitude and worked themselves into a position where they could develop it. It is to be hoped that someone reading this book will find the ancestor of man for us. You, perhaps.

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